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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,873	08/04/2003	Stephen J. Hudgens	ITO.0048US (P16245)	5270

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TROP PRUNER & HU, PC
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HOUSTON, TX 77057-2631

EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/633,873

Applicant(s)

HUDGENS, STEPHEN J.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 16-20 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 26-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-20 and 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed December 12, 2006 has been entered and claims 11-15 and 21 have been cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16-20 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Ichihara et al. ("Ichihara") US PG-Pub 2003/0152867.

Ichihara discloses (figs. 1-16 and pars. 8, 115 and 243) a semiconductor memory device comprising: a semiconductor substrate (101, 102) -- at least layer 102 is formed of silicon (pars. 119 and 214); and a layer of chalcogenide material 104 including Ge.sub.2Sb.sub.2Te.sub.5 (as in claim 17) over said substrate, said chalcogenide material including a species including nitrogen (as in claim 19) and a species including titanium (as in claim 20) (par. 567).

Regarding claim 18, Ichihara discloses (par. 39) grains of the chalcogenide being **approximately** within the recited range.

Regarding claim 22, Ichihara discloses (pars. 214 and 216) an insulator 103 over said substrate and under said chalcogenide material.

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4. Claims 16, 19, 20, 22, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Mizuuchi et al. ("Mizuuchi") US PG-Pub 2006/0193231.

Mizuuchi discloses (fig. 1 and abstract and pars. 3 and 105) a semiconductor memory device comprising: a semiconductor substrate 1 (par. 102); and a layer of chalcogenide material 4 over said substrate, said chalcogenide material including nitrogen (**as in claim 19**); and a species including titanium (**as in claim 20**).

Regarding claim 22, Mizuuchi discloses (par. 103) an insulator 2 over said substrate and under said chalcogenide material.

Regarding claim 24, Mizuuchi discloses (par. 104) titanium containing layer 3 under said chalcogenide material.

Regarding claim 25 Mizuuchi discloses titanium containing layer being sufficiently proximate to said chalcogenide material that titanium **may** diffuse -- a desired result rather than a structural limitation. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959) -- into the phase change material upon heating.

Note that although the prior art meets the claim limitations, applicant's recitation, "to increase crystallization speed"/"to reduce grain size" (claims 11 and 16) does not distinguish over the Ichihara/Mizuuchi reference regardless of the functions allegedly performed by the claimed device, because only the device per se is relevant, not the recited function. Furthermore, a functional language in a device claim is directed to the device per se, no matter which of the device's functions is referred to in the claim. See *In re Ludtke*

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and Sloan, 169 USPQ 563 at 567, and *In re Swinehart*, 169 USPQ 226, both of which make it clear that it is the patentability of the device per se which must be determined in a “functional language” claim and not the patentability of the function, and that an old or obvious device alleged to perform a new function is not patentable as a device, whether claimed in “functional language” terms or not. Note that the above case law makes it clear that in such cases applicant has the burden of showing that a prior art device that appears reasonably capable of performing the allegedly novel function is in fact incapable of doing so. See MPEP § 2114. See *In re Schreiber*, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997) (Spout having “taper ... such as to by itself jam up the popped popcorn before the end of the cone and permit the dispensing of only a few kernels at a shake” anticipated by an oil can spout having the same shape as spout Applicant disclosed as being adapted for dispensing said only a few kernels at said shake) for a discussion of the roles of examiner and applicant in determining when and how functional limitations distinguish a claim from prior art disclosing the same structure. See also *In re King*, 231 USPQ 136 (Fed. Cir, 1986) (“It did not suffice merely to assert that Mizuuchi/Ichihara does not inherently achieve increasing crystallization speed or reducing grain size, challenging the PTO to prove the contrary by experiment or otherwise. The PTO is not equipped to perform such tasks.”) In this case it is reasonable to assume that Ichihara’s or Mizuuchi’s device is capable of increasing crystallization speed or reducing grain size, because similar to Applicant’s device, species of titanium and nitrogen are introduced in the chalcogenide material. Because it is reasonable to assume that the device is capable of performing the claimed function, the burden shifts to Applicants to show that it is not. See MPEP § 2114.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara in view of Horie et al. ("Horie") US PG-Pub 2003/0214857.

Ichihara discloses the device structure as recited in the claim, but fails to disclose a heater.

Horie discloses in fig. 4, a heater 4 extending through an insulator 10 to a chalcogenide material 3 to heat said chalcogenide material.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Ichihara's device by incorporating a heater so as to carry out an initial crystallization of chalcogenide material as taught by Horie.

Response to Arguments

7. Applicant's arguments filed 12/12/2006 have been fully considered but they are not persuasive.

8. Applicants argue that both Ichihara nor Mizuuchi basically cover optical disks and they are not semiconductor memories and they do not work as semiconductor memories.

9. In response, it is pointed out that the recitation "semiconductor memory" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the

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intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

10. Regarding the teachings of the combined references of Ichihara and Horie, Applicants argue that one can carry out crystallization material without reducing the crystallization size or crystallization speed and that there seems to be no reason to combine.

11. In response, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Furthermore, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Horie discloses a heater through an insulator to a chalcogenide in order to carry out an initial crystallization of the chalcogenide material.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANS
March 1, 2007


SUE A. PURVIS
SUPERVISORY PATENT EXAMINER